

**SODA ASH (SODIUM CARBONATE) STATISTICS****By Kenneth E. Porter and Dennis S. Kostick****[All values are in metric tons (t) unless otherwise noted]****Last modification: March 20, 2002**

<b>Year</b>	<b>Primary production</b>	<b>Imports</b>	<b>Exports</b>	<b>Stocks</b>	<b>Apparent consumption</b>	<b>Unit value (\$/t)</b>	<b>Unit value (98\$/t)</b>	<b>World production</b>
1900	329,000				329,000			
1901					365,000			
1902					400,000			
1903					435,000			
1904	471,000				471,000			
1905					494,000			
1906					517,000			
1907					540,000			
1908					563,000			
1909	586,000				586,000			
1910	699,000				699,000			
1911	775,000				775,000			
1912	849,000				849,000			
1913	816,000				816,000			
1914	848,000				848,000			
1915	1,070,000				1,070,000			
1916	1,100,000				1,100,000			
1917	1,280,000	936	44,600		1,240,000			
1918	1,280,000	0	108,000		1,180,000			
1919	918,000	376	45,800		873,000			
1920	23,000	688	75,600		775,000	41.70	339.00	
1921	693,000	0	15,900		677,000	38.20	347.00	
1922	30,400	0	13,400		904,000	22.70	220.00	
1923	1,140,000	0	13,200		1,130,000	23.40	223.00	
1924	40,700	0	13,000		1,170,000	20.50	195.00	
1925	1,230,000	0	14,700		1,220,000	22.20	207.00	
1926	51,500	0	17,900		1,270,000	22.40	206.00	
1927	1,330,000	0	18,500		1,320,000	20.60	192.00	
1928	72,400	0	30,200		1,470,000	21.80	208.00	
1929	1,650,000	13,000	35,400		1,630,000	20.50	196.00	
1930	81,900	2,350	29,900		1,480,000	19.40	190.00	
1931	1,360,000	6	25,100		1,340,000	17.20	184.00	
1932	50,200	14	12,500		1,410,000	17.70	210.00	
1933	1,500,000	14	25,800		1,480,000	14.40	180.00	
1934	80,100	64	30,300		1,900,000	15.70	190.00	
1935	2,360,000	18	39,500		2,320,000	13.90	165.00	
1936	93,300	40	40,200		2,540,000	11.90	139.00	
1937	2,800,000	28	49,700		2,760,000	12.50	142.00	
1938	2,340,000	18	46,300		2,300,000	13.60	157.00	
1939	2,770,000	7	72,600		2,700,000	13.50	158.00	
1940	2,910,000	0	53,100		2,840,000	13.80	161.00	
1941	3,410,000	54	75,700		3,330,000	13.70	152.00	
1942	3,570,000	1	58,500		3,500,000	15.70	157.00	
1943	4,150,000	7,650	72,600		4,080,000	16.90	159.00	
1944	4,280,000	8,560	71,700		4,210,000	17.10	158.00	
1945	4,140,000	16,600	63,500		4,080,000	17.20	157.00	
1946	4,080,000	5,340	21,900		4,020,000	17.50	146.00	
1947	4,350,000	615	28,900		4,290,000	22.10	161.00	
1948	4,330,000	28	188,000		4,220,000	25.30	171.00	
1949	3,740,000	15	68,600		3,670,000	23.00	157.00	
1950	3,930,000	43,700	57,600		3,880,000	23.70	160.00	
1951	4,950,000	0	141,000		4,800,000	26.30	164.00	

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1952	4,320,000	0	96,100		4,230,000	26.70	164.00	
1953	4,810,000	0	150,000		4,660,000	28.00	170.00	
1954	4,730,000	0	149,000		4,590,000	28.30	172.00	
1955	5,080,000	0	139,000		4,870,000	26.90	164.00	12,800,000
1956	5,130,000	0	220,000		4,910,000	29.40	176.00	
1957	4,840,000	0	158,000		4,660,000	30.00	175.00	
1958	4,490,000	0	94,300		4,400,000	29.90	169.00	
1959	5,100,000	0	139,000		4,980,000	28.60	160.00	14,400,000
1960	4,850,000	0	141,000		4,730,000	28.40	156.00	
1961	4,810,000	0	120,000		4,710,000	28.00	153.00	
1962	5,080,000	0	138,000		4,930,000	27.40	148.00	
1963	5,260,000	0	167,000		5,100,000	27.20	145.00	
1964	5,710,000	0	250,000		5,400,000	26.30	139.00	
1965	5,820,000	0	251,000		5,570,000	25.60	133.00	
1966	6,180,000	0	314,000		5,860,000	25.80	130.00	
1967	5,980,000	0	276,000		5,690,000	25.90	126.00	
1968	6,020,000	0	261,000		5,760,000	22.70	107.00	
1969	6,350,000	0	294,000		6,090,000	22.50	99.91	
1970	6,430,000	0	305,000	51,000	6,130,000	23.18	97.39	
1971	6,480,000	0	396,000	24,000	6,100,000	23.38	94.08	19,800,000
1972	6,830,000	0	435,000	48,000	6,390,000	24.55	95.75	20,500,000
1973	6,860,000	9,070	386,000	47,200	6,460,000	27.95	102.60	21,400,000
1974	6,860,000	29,000	512,000	32,700	6,380,000	37.34	123.40	22,400,000
1975	6,470,000	1,810	480,000	49,000	5,970,000	46.52	140.90	23,400,000
1976	6,740,000	0	585,000	92,500	6,230,000	54.78	156.90	24,500,000
1977	7,290,000	1,270	689,000	91,600	6,610,000	59.73	160.70	25,400,000
1978	7,510,000	7,050	707,000	68,900	5,480,000	60.09	150.20	27,200,000
1979	7,490,000	36,600	905,000	61,700	6,630,000	71.15	159.70	28,200,000
1980	7,510,000	16,600	993,000	121,000	6,470,000	99.04	195.90	28,300,000
1981	7,510,000	10,700	953,000	239,000	6,450,000	100.50	180.20	28,000,000
1982	7,100,000	16,400	1,010,000	294,000	6,050,000	97.39	164.50	26,800,000
1983	7,680,000	18,100	1,480,000	279,000	6,230,000	84.82	138.80	27,900,000
1984	7,720,000	15,100	1,500,000	292,000	6,230,000	73.85	115.90	29,200,000
1985	7,760,000	51,000	1,580,000	356,000	6,120,000	74.76	113.30	28,200,000
1986	7,650,000	96,100	1,860,000	267,000	5,980,000	72.31	107.50	29,400,000
1987	8,070,000	136,000	2,020,000	235,000	6,220,000	73.60	105.60	30,200,000
1988	8,740,000	121,000	2,240,000	261,000	6,590,000	73.81	101.70	31,100,000
1989	8,990,000	129,000	2,650,000	221,000	6,520,000	84.96	111.70	31,700,000
1990	9,160,000	146,000	2,390,000	287,000	6,840,000	91.33	113.90	32,400,000
1991	9,000,000	134,000	2,730,000	234,000	6,480,000	92.79	111.10	31,300,000
1992	9,380,000	72,000	2,960,000	371,000	6,360,000	89.21	103.70	31,100,000
1993	8,960,000	89,000	2,800,000	274,000	6,350,000	81.95	92.44	31,500,000
1994	9,320,000	79,000	3,230,000	203,000	6,240,000	77.65	85.40	30,700,000
1995	10,100,000	83,000	3,570,000	306,000	6,510,000	82.12	87.83	31,700,000
1996	10,200,000	107,000	3,840,000	271,000	6,480,000	91.05	94.59	31,800,000
1997	10,700,000	101,000	4,190,000	259,000	6,670,000	85.15	86.47	33,100,000
1998	10,100,000	83,000	3,660,000	273,000	6,560,000	83.00	83.00	32,400,000
1999	10,200,000	92,000	3,620,000	248,000	6,740,000	76.18	74.54	33,200,000
2000	10,200,000	75,000	3,900,000	245,000	6,430,000	73.01	69.14	34,200,000

## Soda Ash Worksheet Notes

### Data Sources

The sources of data for the soda ash (sodium carbonate) worksheet are the mineral statistics publications of the U.S. Bureau of Mines (USBM) and the U.S. Geological Survey (USGS)—Minerals Yearbook (MYB); and Mineral Commodity Summaries (MCS) and its predecessor, Commodity Data Summaries (CDS). Data on sodium compounds were first reported in the 1932–33 Minerals Yearbook (MYB). Prior to this, the Mineral Resources of the United States (MR) series did not report on sodium compounds. USBM Information Circular 7212 (Harness and Coons, 1942) (IC 7212), published in June 1942, was the primary source of data for the years prior to 1942. Natural soda ash production and stock data were collected and reported by the USBM and USGS. Synthetic soda ash production (prior to 1979), import, and export data were collected and reported by the U.S. Census Bureau and reported in the MYB. The years of publication and corresponding years of data coverage are listed in the references section below. Blank cells in the worksheet indicate that data were not available.

### Primary Production

Primary production data are the sum of synthetic or manufactured soda ash production by the Solvay process and natural soda ash production from brine deposits (Searles Lake, Trona, California, and Owens Lake, Lone Pine, California) and trona deposits (Green River, Wyoming). Natural production data for the years 1916–40 are from IC 7212. Data for the years 1900–40 include soda ash, sodium bicarbonate, and trona. Data for the years 1923–26 and 1930 also include sal soda. Production data for the years 1935–41 include soda ash, bicarbonate, and trona. Production data for the years 1942–43 include only soda ash and trona. Synthetic (manufactured) production data from USBM and USGS mineral commodity records for the years 1909–40 were reported in IC 7212. Production data are not available for manufactured soda ash for the years 1901–03, 1905–08, 1920, 1922, 1924, 1926, 1928, 1930, 1932, 1934, and 1936 because the data were not reported by the U.S. Census Bureau and Bureau of Foreign and Domestic Commerce. Manufactured soda ash production data for the years 1941–44 are from the text in the MYB. The MCS reported both natural and manufactured (Solvay) production for the years 1955–78. Natural and manufactured production data were combined for the years 1979–86 to keep from disclosing individual company data. U.S. production of soda ash has been 100% from natural sources since 1986.

### Imports

The U.S. Census Bureau collected import data for soda ash for the years 1929–50. Import data were reported for soda ash for the years 1973–99 in the MYB. The 1982 MYB reported sodium carbonate and sodium bicarbonate import data (quantity and value) for 1981 and 1982. Subsequent MYBs only reported the sodium carbonate data.

### Exports

Sodium carbonate export data were not reported in the MYB for the years 1900–36, as they would include mostly manufactured sodium salts and therefore would not be comparable with natural salts contained in the MYB reports. The U.S. Census Bureau collected export data for soda ash for the years 1917–36. Prior to 1949, exports were not separately classified as natural or manufactured, and sodium sulfate and soda ash were combined. Export data for the years 1935–47 included in the “Estimated consumption” table in the MYB.

### Stocks

Stocks reported in the MCS and the MYB are for the years 1970–2000.

### Apparent Consumption

Apparent consumption were estimated for the years 1900–36 using the following formula:

$$\text{APPARENT CONSUMPTION} = \text{PRIMARY PRODUCTION} + \text{IMPORTS} - \text{EXPORTS} \pm \text{STOCK CHANGES.}$$

Apparent consumption was estimated for the years 1901–03 and 1905–08 by linear regression. Estimates for apparent consumption were also made for the years 1920, 1922, 1924, 1926, 1928, 1930, 1932, 1934, and 1936 by averaging the values for the intervening years. Apparent consumption data for the years 1937–2000 were reported in the MYB and the MCS.

### Unit Value (\$/t)

The “Unit value” was derived by dividing the total revenue received for the sale of all bulk, dense natural soda ash sold on an f.o.b. plant basis, by the quantity of soda ash sold. It was reported in the MYB for the years 1920–2000. The average price of sales (natural soda ash) was assumed to apply to both natural and synthetic soda ash production prior to the energy shortage in the early 1970’s. List prices were reported in the MYB for Green River (trona), Searles Valley (brine) and synthetic soda ash, but were not used to estimate unit value because negotiated contract prices were always significantly lower than the published prices.

### Unit Value (98\$/t)

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

## **World Production**

World production of sodium carbonate (both natural and manufactured) was first reported in the 1973 MYB. Prior to 1971, only incomplete data were found. The combined natural and synthetic soda ash production data were reported in the MYB for the years 1978–88. The synthetic soda ash production data were estimated by taking the difference between total production reported in the MYB and the natural production reported in the MCS. Natural and synthetic soda ash production data were reported in the MCS for the years 1988–2000.

## **References**

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